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Oil and Gas Processing Flow Measurement: Principles, Standards and Best Practices

PIK859-0526 BSTN-1

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295 Chiswick High Road
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Place:	BOSTON	**Venue:**	Club Quarters Hotel Faneuil Hall (161 Devonshire Street, Boston, MA 02110, USA) - TBC		
Start Date:	04-05-2026	**End Date:**	08-05-2026	**PPP:**	£4950

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If you can't train them, you can't blame them!

Short Description:

Accurate flow measurement is the cornerstone of operational efficiency, process optimisation, and fiscal accountability in the oil and gas industry. This comprehensive five-day training program provides participants with an in-depth understanding of the principles, technologies, and practices governing oil and gas flow measurement. From the fundamentals of fluid dynamics and measurement uncertainty to advanced metering technologies and calibration techniques, the course integrates theory with practical, field-based applications. Participants will gain hands-on insights into flow metering systems used in upstream, midstream, and downstream operations. The course emphasises industry standards such as API, ISO, and AGA guidelines, covering both conventional and digital flow measurement techniques. By the end of the program, participants will be equipped to select, operate, and maintain flow measurement systems to ensure accuracy, reliability, and regulatory compliance across all stages of oil and gas processing.

Course Overview:

Target Audience

- Instrumentation and control engineers.
- Process and production engineers.
- Metering and measurement specialists.
- Operations and maintenance personnel.
- Calibration and quality assurance technicians.
- Project and asset managers in oil and gas operations.

Course Objectives

By the end of this course, participants will be able to:

1. Understand the fundamental principles and methods of oil and gas flow measurement.

2. Identify and select appropriate flow metering technologies for different applications.
3. Apply industry standards and best practices for flow measurement accuracy and compliance.
4. Troubleshoot, calibrate, and maintain various types of flow meters.
5. Evaluate measurement data to support operational efficiency and integrity management.

Program Outline:

DAY 1: Fundamentals of Flow Measurement

1. Introduction to Flow Measurement in Oil & Gas Processing.
2. Basic Fluid Properties & Flow Regimes.
3. Principles of Flow Dynamics & Measurement Theory.
4. Overview of Measurement Units & Conversions.
5. Introduction to Measurement Uncertainty & Accuracy Concepts.

DAY 2: Flow Measurement Technologies & Devices

1. Differential Pressure Flow Meters (Orifice, Venturi, Nozzle).
2. Positive Displacement & Turbine Flow Meters.
3. Coriolis, Ultrasonic & Magnetic Flow Meters.
4. Gas Flow Measurement Techniques & Standards (AGA, ISO).
5. Selection Criteria for Different Flow Meter Types.

DAY 3: Oil & Gas Measurement Systems

1. Liquid & Gas Metering Systems (Upstream to Downstream).
2. Custody Transfer & Allocation Measurement Principles.
3. Multiphase Flow Measurement Systems.
4. Sampling Systems & Quality Assurance in Flow Measurement.
5. Skid-Mounted Metering Systems & Field Installations.

DAY 4: Calibration, Verification & Troubleshooting

1. Flow Meter Calibration Procedures & Equipment.
2. Reference Standards & Traceability in Calibration.
3. Common Measurement Errors & Troubleshooting Methods.

4. Data Validation & Meter Performance Monitoring.
5. Practical Case Study: Diagnosing Measurement Inaccuracies.

DAY 5: Standards, Digitalization & Best Practices

1. International Standards & Regulatory Frameworks (API, ISO, AGA, OIML).
2. Digital and Smart Metering Technologies (IoT, SCADA Integration).
3. Data Management and Flow Measurement Reporting Systems.
4. Safety, Integrity, and Environmental Considerations in Metering.
5. Final Workshop: Designing an Optimal Flow Measurement System.